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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/540,955 | 03/31/2000 | George H. BuAbbud | 560043610132 | 1921 |

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06/05/2003

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EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/540,955 | BUABBUD ET AL. | |
| | Examiner | Art Unit | |
| | Shi K. Li | 2633 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1,2,5,8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4,6,7 and 10-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The indicated allowability of claim 3 is withdrawn in view of the newly discovered reference(s) to Kim (U.S. Patent 5,719,904). Rejections based on the newly cited reference(s) follow.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 3-4, 6-7, 10 and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neidlinger et al. (U.S. Patent 5,491,575) in view of Kaede et al. (K. Kaede et al., "A Passive Double Star Optical Subscriber System with Frequency Division Duplex Transmission and Flexible Access", IEICE Trans. Communication Vol. E75-B, No. 9, September 1992) and Kim (U.S. Patent 5,719,904).

Neidlinger et al. teaches a system and method for transmitting bi-directional communication data over an optical fiber. Neidlinger et al. discloses a communication network in the drawing of the patent. A NRZ data is sent from the central station (first location) to the decentralized station (second location) on the upper right corner of the drawing (see col. 4, lines 15-25). The decentralized station includes photodetector PD, low pass filter and discriminator for receiving the data from the central station. The decentralized station receives subscriber data and feeds it to the modulator and modulates a carrier whose frequency is a multiple of the clock frequency of the first NRZ signal (see col. 4, lines 44-45). Neidlinger et al. uses phase modulation (PSK) for the signal from the decentralized station to the central station. Note that the waveform of FIG. 5D of the current application represents a PSK modulation of FIG. 5A.

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That is, the modified Manchester coding described in the current claim is generally known as PSK. Neidlinger et al. teaches that the carrier frequency for PSK should be a multiple of the clock frequency of the data from the central station to the decentralized station, $f_T = n \cdot f_B$, where n is an integer, and gives $n=2$ and $n=4$ as examples (see col. 4, lines 42-52). Since three (3) is an integer, one may also choose $n=3$.

Regarding claims 3, 7 and 12-20, the differences between Neidlinger et al. and the claimed inventions are a) Neidlinger et al. does not explicitly specify whether the wavelength use for sending data from the central station to the decentralized station is the same as the wavelength use for sending data from the decentralized station to the central station, and b) Neidlinger et al. does not include three (3) pulses for each data bit and use majority voting to determine the value of the received bit.

Neidlinger et al. cites Kaede et al. in col. 1, lines 50-61. Kaede et al. teaches in FIG. 8 the use of the same wavelength for data from CO to ONU as well as for data from ONU to CO (see p. 845, first paragraph). Using the same wavelength eliminates the need for the additional WDM equipment. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same wavelength for sending data from the central station to the decentralized station as well as for sending data from the decentralized station to the central station, as taught by Kaede et al., in the method and system of Neidlinger et al. because use the same wavelength eliminates the need for the additional WDM equipment.

Majority voting is a well-known simple error correction mechanism. Kim teaches in col. 1, lines 43-51 the basic concept of majority voting. One of ordinary skill in the art would have been motivated to combine the teaching of Kim with the modified bi-directional communication

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system of Neidlinger et al. and Kaede et al. because majority voting is a simple method for reducing errors. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use majority voting method, as taught by Kim, in the modified bi-directional communication system of Neidlinger et al. and Kaede et al. because majority voting is a simple method for reducing errors.

Regarding claim 4, the clock frequency depends on the amount of data to be sent. Neidlinger et al. gives $f_B=70$ MHz as an example (see col. 4, lines 50-51). Kaede et al. plots in FIG. 10 the bit rate over a range from 10 Mbps to over 100 Mbps. One may choose a clock rate of 25 MHz since it is within the range 10 MHz~100 MHz. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a clocking frequency of about 25 MHz in the modified communication system and method of Neidlinger et al., Kaede et al. and Kim.

Regarding claims 6 and 10, Neidlinger et al. includes low pass filter TP in the central station and low pass filter LP in the decentralized station.

4. Claim 11 is rejected under 35-U.S.C. 103(a) as being unpatentable over Neidlinger et al., Kaede et al. and Kim as applied to claims 3-4, 6-7 and 10 above, and further in view of Watanabe (U.S. Patent 5,896,211).

Neidlinger et al., Kaede et al. and Kim have been discussed above in regard to claims 3-4, 6-7, 10 and 12-20 above. Neidlinger et al. includes high pass filter HP in the decentralized station between the modulator and the laser diode and band-pass filter BP in the central station between the photodiode and the discriminator. The difference between the modified communication system and method of Neidlinger et al., Kaede et al. and Kim and the claimed

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invention is that Neidlinger et al. uses high pass filter in the decentralized station while the claimed invention uses band pass filter. Watanabe teaches in FIG. 10 the use of band pass filter after the modulation. It is well known in the art that the spectrum of a modulated signal is practically band limited. Using a band pass filter blocks noise outside the signal spectrum. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a band pass filter instead of the high pass filter, as taught by Watanabe, in the modified communication system and method of Neidlinger et al., Kaede et al. and Kim because a band pass filter blocks noise outside the signal spectrum.

Response to Arguments

5. Applicant's arguments with respect to claims 7 and 10-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9314 for regular communications and 703 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

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skl

May 22, 2003



JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600